

explained below. Applicants submit that all pending claims distinguish over the cited art and are in condition for allowance.

The present invention generally describes a hearing aid apparatus that can be configured to operate in either a hearing aid mode or a communications mode. In an embodiment of the present invention, the hearing aid apparatus comprises a first signal path with a microphone for receiving sound, a processor for processing the sound and a speaker for outputting the processed sound, and a second signal path for establishing communications between at least a portion of the first signal path and a communications device connected to the hearing aid apparatus. The hearing aid apparatus also comprises a switch for automatically selecting the first signal path or the second signal path in response to a detected occurrence of a predetermined condition of the second signal path. According to this embodiment, the second signal path is adapted to transmit signals to and receive signals from the communications device.

In another embodiment, the hearing aid apparatus further comprises a second switch for manually selecting between the first signal path and the second signal path, and a third switch for manually placing the apparatus into a sleep state, wherein the hearing aid apparatus can be switched between a hearing aid mode and a communications mode by consecutively pressing the second switch and the third switch. Accordingly, the hearing aid apparatus can operate in a hearing aid mode where it can automatically and alternatively switch between a hearing aid state, a communications state, and a sleep state. Or, the hearing aid apparatus can operate in a communications mode where it can automatically and alternatively switch between a communications state and a sleep state. See Application, page 4, line 11 – page 8, line 23.

The Taenzer patent, on the other hand, describes a bi-directional wireless audio communications system using RF reflective transmission technology for reducing power consumption by a transceiver of the communications system. Specifically, the Taenzer patent teaches a wireless communications system having a transceiver 10, a transmitter 12 for wireless transmitting an uplink signal 11A to a transceiver 10, and a receiver 13 or 32 for wireless receiving a downlink signal 11B from the transceiver 10. According to the Taenzer patent, the reflective type communications system operates in two states, ***the transmit state and the receiver state***. In the transmit state, the transmitter 12 wirelessly transmits the modulated RF uplink signal 11A to the transceiver 10. The transceiver 10 receives and demodulates the RF uplink signal 11A while consuming no power at RF frequencies. In the receiver state, the transceiver 10

first receives an unmodulated signal from the transmitter 12. The transceiver 10 modulates the unmodulated signal by a passive modulator and then reflects the modulated signal to the receiver 13 or 32 as the downlink signal 11B. As a result, the transceiver 10 consumes very little power during both the transmit state and the receiver state. See Figs. 1A, 1B, col. 5, lines 11-49 of the Taenzer patent. Since the transceiver 10 is a reflective type communication device, it needs no telecommunication circuitry like a cell phone to wirelessly communicate with a remote device. Moreover, the system described in the Taenzer patent operates in two states (i.e., the transmit state and the receiver state), it must be able to switch rapidly between these two states in order to operate as a full-duplex system that allows uplink and downlink signals being transmitted almost simultaneously. See col. 5, line 50 – col. 6, line 7 of the Taenzer patent.

As discussed, the communications system described in the Taenzer patent can operate in two operation states, i.e., the transmit state and the receiver state. On the other hand, the presently described communication state, either under the hearing aid mode or under the communications mode, can transmit signals to and receive signals from a communications device connected to the hearing aid apparatus. Thus, the two operational states of the Taenzer patent clearly correspond to the present application's communications state only, and have no similarity to the hearing aid mode and the communication mode described in the present application. Although the Taenzer patent does mention the first mode and the second mode in its specification, these two modes are indeed referred to as the transmit state and the receiver state, respectively, and have nothing to do with a hearing aid mode and a communications mode, as described in the present application. See col. 5, lines 18-49 of the Taenzer patent.

Moreover, as a reflective type communications device, the transceiver 10 must receive the unmodulated signal, which is wirelessly transmitted from the transmitter 12, before it can transmit the modulated downlink signal 10B to the receiver 13 or 32. The transceiver 10 thus cannot by itself initiate transmissions of the modulated downlink signal 11B without receiving the unmodulated downlink signal 11B first. The presently described hearing aid apparatus, on the other hand, is not a reflective type communications device. Thus, the present hearing aid apparatus can initiate communications with a remote location without waiting for an incoming transmission from the remote location.

In addition, sound or signals received by the transceiver 10 in the Taenzer patent are always processed for hearing aid purposes. Thus, the transceiver 10 operates in only one state,

i.e., the hearing aid state. Nothing in the Taenzer patent ever teaches or suggests switching between a first signal path primarily used for hearing aid purpose and a second signal path adapted to transmit signals to and receive signals from a communications device connected to the hearing aid apparatus. Nor does that patent teach or suggest switching between a hearing aid mode, which can comprise a hearing aid state, a communication state, and/or a sleep state, and a communications mode, which can comprise a communication state and/or a sleep state, as described in the present application. Thus, the present application distinguishes over the Taenzer patent.

The amended claim 1 recites, in pertinent part, “a first signal path . . . ; a second signal path . . . said second signal path being adapted to transmit signals to and receive signals from the communications device; and a switch for automatically selecting the first signal path or the second signal path in response to a detected occurrence of a predetermined condition of the second signal path.” As discussed above, the Taenzer patent does not teach or suggest the above-mentioned limitations of claim 1. Thus, claim 1 distinguishes over the Taenzer patent and is in condition for allowance.

Claims 2-5 and 7-8 depend on claim 1. Thus, claims 2-5 and 7-8 similarly distinguish over the Taenzer patent and are in condition for allowance.

Claims 9-12 depend on claim 1. Applicants submit that none of the Taenzer patent, the Topholm patent, the Kerns patent, and the Anderson patent teaches or even suggests the above-mentioned limitations of claim 1. Thus, claims 9-12 distinguish over the art of record and are in condition for allowance.

Claims 13 and 15 depend on claim 1. Thus, claims 13 and 15 distinguish over the Taenzer patent and are in condition for allowance.

The newly added claim 16 recites, in pertinent part, “an I/O port adapted to receive signals from and transmit signals to a communications device connected to the I/O port for providing wire or wireless communication with a remote device, the hearing aid apparatus being adapted to operate in a hearing aid state or a communications state.” Applicants submit that claim 16 distinguishes over the art of record and is in condition for allowance.

Claims 17-23 depend on claim 16. Thus, claims 17-23 are similarly in condition for allowance.

The newly added claim 24 recites, in pertinent part, "a second switch for manually selecting between the first signal path and the second signal path; and a third switch for manually placing the apparatus into a sleep state, wherein the hearing aid apparatus can be switched between a hearing aid mode and a communications mode by consecutively pressing the second switch and the third switch." Applicants submit that claim 24 distinguishes over the art of record and is in condition for allowance.

Accordingly, in view of the above remarks, it is submitted that this application is now ready for allowance. Early notice to this effect is solicited.

If in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned at (650) 849-4892.

DATE: February 5, 2003

Respectfully submitted,

By: 

Wei-Fu Hsu

Registration No.: 45,723

Bingham McCutchen, LLP
Three Embarcadero Center, Suite 1800
San Francisco, California 94111
Telephone: (415) 393-2000
Telefax: (415) 393-2286

Version with markings to show changes made

1. (Amended) Hearing aid apparatus, comprising:
 - a first signal path having a microphone for receiving sound in a vicinity of a user, a signal processor for processing the sound into a processed sound, and a speaker for outputting the processed sound into a vicinity of an ear canal of the user;
 - a second signal path for establishing communication between [at least a portion of the first signal path] the hearing aid apparatus and a location remote from the user via a communications device connected to the hearing aid apparatus, said second signal path being adapted to transmit signals to and receive signals from the communications device; and
 - a switch for automatically selecting the first signal path or the second signal path in response to a detected occurrence of a predetermined condition of the second signal path.
3. (Amended) Hearing aid apparatus according to claim 1, wherein the second signal path is selected when the hearing aid apparatus is in a communications state with the [a remote] communications device.
4. (Amended) Hearing aid apparatus according to claim 1, wherein said communications device is a cell phone and said predetermined condition is a [detected] phone ring condition of [a] the cell phone.
8. (Amended) Hearing aid apparatus according to claim 1, comprising:
 - a switch to place the apparatus into a sleep state, wherein power to at least some portions of the hearing aid apparatus [components] is shutdown.
15. (Amended) Hearing aid apparatus according to claim 2, comprising:
 - a switch for manually selecting a communications mode wherein the hearing aid state is disabled, [and] the hearing aid apparatus [can be] being adapted to be automatically switched between a communications state and a sleep state of the communications mode.